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CRUSTACEANS AS FOOD FOR FISHES IN FISH CULTURE

Prepared in the Division of Fishery Biology

For many years crustaceans have been regarded as valuable food for fishes. This view is based on the fact that they often form a large proportion of the natural food of many species of fishes. This is especially true of the young which in many species subsist almost entirely upon crustacea.

The fresh-water crustacea, all of which are more or less useful as food for fishes, are divided into two groups or classes technically designated as Entomostraca and Malacostraca. While both groups contain many species which form a considerable portion of the natural food of many kinds of fish, only a few forms have received special attention in fish-cultural practices.

ENTOMOSTRACA

The Entomostraca are very small, and some are so minute as to be invisible to the naked eye. They enter largely into the natural food of the youngest stages of various fishes and even the adults of some fishes.

There is scarcely a natural body of water of any size or character that will not be found to contain some form or other of Entomostraca. Of these, perhaps the best known form is a genus of the so-called water fleas, known as Daphnia. Daphnia pulex may serve as a representative of the widely distributed Entomostraca, being found in almost all regions of the world. This species attains a length of about one-tenth of an inch, and wherever found under favorable conditions, it is usually in swarming multitudes.

MALACOSTRACA

This group of crustaceans comprises the generally larger and more conspicuous forms. In classification they fall into four distinct groups or orders: Isopoda ("Sowbugs"); Amphipoda (Scuds, "Shrimp"); Mysidacea ("Shrimp"); and Decapoda (prawns or shrimp, and crayfish or "crawfish" or "crab"). These orders differ much in superficial appearance, shape of body, size, color, and structure.

Isopoda.- Included among the Isopoda are the common terrestrial sowbugs or pillbugs and several aquatic species found in brooks and ponds. The most common species (Asellus communis)attains a length of about half an inch. It is not generally abundant enough to make it more than of accessory value as fish food.

Amphipoda.- Amphipoda or scuds include those small forms related to the sand hopper of the seashore and are commonly though inappropriately designated as "shrimp". The amphipods generally vary greatly in the nature of their habitats, but are very similar in their habits. They are quick and active in their movements, their thoracic legs being adapted for climbing, and their abdominal appendages for swimming and jumping. They dart about among green water weeds, usually keeping well in shelter and swim rapidly when disturbed. They are hardy and their habits enable them to maintain their numbers although they are not as prolific as many other crustaceans. They carry their young in a pectoral brood pouch until well developed, and their agility and ability to conceal themselves serves to a considerable degree as protection against predacious enemies.

There are several species of scuds or "shrimp" in North American waters which, owing to their general abundance, are of considerable importance as fish food. One kind, however, may be better adapted to a certain locality than others and when artificial distribution is contemplated, it is necessary to take into consideration the physical and chemical conditions essential for success. Notwithstanding the wide distribution of some forms and their general abundance they require certain kinds of surroundings with are different for each species.

Decapoda. - The principal fresh-water crustaceans in this group of interest as fish food are the shrimps or prawns and the crayfishes. Of the former Palaemonetes is the most important. It has been recorded from Florida to Illinois and Lake Erie, and is the smallest of fresh-water decapods. It is frequently abundant,